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EXAMINER	
MAURO JR, THOMAS J	

ART UNIT	PAPER NUMBER
2143	

DATE MAILED: 01/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/656,538	LEE ET AL.	
	Examiner	Art Unit	
	Thomas J. Mauro Jr.	2143	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 16 September 2004.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-21 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-21 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This action is responsive to the amendment filed with a Request for Continued Examination (RCE) on September 16, 2004. Claims 1-21 remain pending and are presented for examination. A formal action on the merits of claims 1-21 follows.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-7, 10-12 and 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Banavar et al. (U.S. 6,336,119) in view of Calvert et al., entitled "Core Selection Methods for Multicast Routing".

Regarding claim 1, Banavar teaches a method of multicasting information to a set of clients comprising:

constructing a data topology associated with the set of clients **[Banavar -- Figures 1, 4A-B, Col. 5 lines 30-52 and lines 61-67 and Col. 6 lines 41-60 – Topology is constructed between brokers and subscribers by constructing multicast clusters, i.e. subsets of multicast groups. This configuration, i.e. topology, is static unless network changes occur]**;

determining a primary client using network location of the client, the network location relating to a data topology **[Banavar -- Col. 5 lines 66-67 and Col. 6 lines 41-44 – Network location data, based upon the current configuration of the network, i.e. topology, is used to configure and group the brokers, i.e. primary clients, into clusters]**;

transmitting the information to a primary client from a server **[Banavar -- Figures 1 and 4A and Col. 3 lines 7-12 – Brokers, i.e. primary clients, receive information from central source, i.e. publishing broker (Col. 2 lines 54-55)]**; and

instructing the primary client to forward the information to a secondary client **[Banavar -- Figures 1 and 4A and Col. 3 lines 13-15 – Brokers forward the information to their consumers]**.

Banavar fails to teach additionally using performance information to construct the topology of clients and to determine a primary client.

Calvert, however, teaches selecting a primary client, i.e. a broker, based upon performance information gathered from all nodes which is a combination between bandwidth and delay **[Calvert -- Page 640, Section 3.4, paragraph 2 – Core node, i.e. primary client, is chosen using a performance based method]**.

In addition, Calvert and Banavar discloses that it would be advantageous use the relationship between performance and topology to make better core choices **[Calvert -- Page 640, Section 3.3, paragraph 1] [Banavar -- Col. 5 lines 61-62]**.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the use of performance information in determining a primary client and construction of the topology, as taught by Calvert into the invention of Banavar, in order to

achieve a fast performing multicasting system which routes the packets of information to all nodes in a short amount of time and with minimal delay for providing an optimal topology for routing information.

Regarding claim 2, Banavar-Calvert teach the invention substantially as claimed, as aforementioned in claim 1 above, including receiving performance information from the set of clients **[Calvert -- Page 640, Sec. 3.4, Paragraph 2 – In order to know the performance of nodes, the system must receive performance information, i.e. bandwidth and delay, from each of the nodes]**.

Regarding claim 3, Banavar-Calvert teach the invention substantially as claimed, as aforementioned in claim 1 above, including pinging clients to determine the network location of the clients **[Banavar -- Col. 5 lines 66-67 – Col. 6 lines 41-44 – Banavar teaches using network location to group clients together. In order to determine the network location, it is required for the server to ping the clients and use that address to determine the client's location on the network. Therefore, this limitation is implicitly taught]**.

Regarding claim 4, Banavar-Calvert teach the invention substantially as claimed, as aforementioned in claim 1 above, wherein the information is streaming video **[Calvert -- Page 638, Sec 2.2 – Videoconference applications, i.e. streaming video]**. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include streaming

video as the multicast data as taught by Calvert, into the invention of Banavar, in order to efficiently send out data which normally would take up a lot of bandwidth and time.

Regarding claim 5, Banavar teaches a method of multicasting information to a set of clients comprising:

constructing a data topology associated with the set of clients **[Banavar -- Figures 1, 4A-B, Col. 5 lines 30-52 and lines 61-67 and Col. 6 lines 41-60 – Topology is constructed between brokers and subscribers by constructing multicast clusters, i.e. subsets of multicast groups. This configuration, i.e. topology, is static unless network changes occur]**;

selecting a subset of the clients to be primary clients based on the network location relating to a data topology **[Banavar -- Col. 5 lines 66-67 and Col. 6 lines 41-44 – Network location data, based upon the current configuration of the network, i.e. topology, is used to determine and furthermore to configure and group the brokers, i.e. primary clients, into clusters]**; and

transmitting the information to the primary clients for retransmission to other clients in the set of clients **[Banavar -- Figures 1 and 4A and Col. 3 lines 7-15 – Brokers, i.e. primary clients, receive information from central source, i.e. publishing broker (Col. 2 lines 54-55) and forward the information to their consumers, i.e. clients]**.

Banavar fails to explicitly teach determining a performance parameter for each of the clients and using the performance information to construct the topology of clients and to determine a primary client.

Calvert, however, teaches determining a performance parameter for each of the clients **[Calvert -- Page 640, Sec. 3.4, Paragraph 2 – In order to know the performance of nodes, the system must receive performance information, i.e. bandwidth and delay, from each of the nodes]** and selecting a subset of the clients to be primary clients based upon the performance information **[Calvert -- Page 640, Sec. 3.4, Paragraph 2 – Core node, i.e. primary client, is chosen using a performance based method]**.

In addition, Calvert and Banavar disclose that it would be advantageous use the relationship between performance and topology to make better core choices **[Calvert -- Page 640, Section 3.3, paragraph 1] [Banavar -- Col. 5 lines 61-62]**.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate determining performance parameters for the clients and using performance information in constructing the topology and selecting a subset of clients to be primary clients, as taught by Calvert into the invention of Banavar, in order to achieve a fast performing multicasting system which routes the packets of information to all nodes in a short amount of time and with minimal delay for providing an optimal topology for routing information.

Regarding claim 6, Banavar teaches a method of multicasting information to a set of clients comprising:

constructing a data topology associated with the set of clients **[Banavar -- Figures 1, 4A-B, Col. 5 lines 30-52 and lines 61-67 and Col. 6 lines 41-60 – Topology is constructed**

between brokers and subscribers by constructing multicast clusters, i.e. subsets of multicast groups. This configuration, i.e. topology, is static unless network changes occur];

determining a network location for each of the clients; selecting a subset of the clients to be primary clients based on the network location **[Banavar -- Col. 5 lines 66-67 – Col. 6 lines 1-3 – In order to group brokers into clusters by network location, it is required that the location be determined, i.e. pinging the clients]**;

determining a primary client using the network location of each of the clients, the network location relating to a data topology **[Banavar -- Col. 5 lines 66-67 and Col. 6 lines 41-44 – Network location data, based upon the current configuration of the network, i.e. topology, is used to configure and group the brokers, i.e. primary clients, into clusters]**; and

transmitting the information to the primary clients for retransmission to other clients in the set of clients **[Banavar -- Figures 1 and 4A and Col. 3 lines 7-15 – Brokers, i.e. primary clients, receive information from a central source, i.e. publishing broker (Col. 2 lines 54-55) and forward the information to their consumers, i.e. clients]**.

Banavar fails to explicitly teach determining a performance parameter for each of the clients and using the performance information to construct the topology of clients and to determine a primary client.

Calvert, however, teaches selecting a primary client, i.e. a broker, based upon performance information gathered from all nodes which is a combination between bandwidth and delay **[Calvert -- Page 640, Section 3.4, paragraph 2 – Core node, i.e. primary client, is chosen using a performance based method]** and selecting a subset of the clients to be primary clients based upon the performance information **[Calvert -- Page 640, Sec. 3.4, Paragraph 2 – Core**

node, i.e. primary client, is chosen using a performance based method].

In addition, Calvert and Banavar disclose that it would be advantageous use the relationship between performance and topology to make better core choices **[Calvert -- Page 640, Section 3.3, paragraph 1] [Banavar -- Col. 5 lines 61-62]**.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate determining a primary client and construction of the topology using performance information and selecting a subset based upon performance information, as taught by Calvert into the invention of Banavar, in order to achieve a fast performing multicasting system which routes the packets of information to all nodes in a short amount of time and with minimal delay for providing an optimal topology for routing information.

Regarding claim 7, Banavar teaches a method of multicasting information to a set of clients comprising:

determining a network location for each of the clients **[Banavar -- Col. 5 lines 66-67 – Col. 6 lines 1-3 – In order to group brokers into clusters by network location, it is required that the location be determined, i.e. pinging the clients]**;

constructing a data topology associated with the set of clients **[Banavar -- Figures 1, 4A-B, Col. 5 lines 30-52 and lines 61-67 and Col. 6 lines 41-60 – Topology is constructed between brokers and subscribers by constructing multicast clusters, i.e. subsets of multicast groups. This configuration, i.e. topology, is static unless network changes occur]**;

selecting a subset of the clients to be primary clients based on the network location, the network location relating to a data topology **[Banavar -- Col. 5 lines 66-67 and Col. 6 lines 41-**

44 – Network location data, based upon the current configuration of the network, i.e. topology, is used to determine and furthermore to configure and group the brokers, i.e. primary clients, into clusters]; and

transmitting the information to the primary clients for retransmission to other clients in the set of clients **[Banavar -- Figures 1 and 4A and Col. 3 lines 7-15 – Brokers, i.e. primary clients, receive information from central source, i.e. publishing broker (Col. 2 lines 54-55) and forward the information to their consumers, i.e. clients]**.

Banavar fails to explicitly teach determining a performance parameter for each of the clients and using the performance information to construct the topology of clients and to determine a primary client.

Calvert, however, teaches determining a performance parameter for each of the clients **[Calvert -- Page 640, Sec. 3.4, Paragraph 2 – In order to know the performance of nodes, the system must receive performance information, i.e. bandwidth and delay, from each of the nodes]** and selecting a subset of the clients to be primary clients based on the performance parameter **[Calvert -- Page 640, Sec. 3.4, Paragraph 2 – Core node, i.e. primary client, is chosen using a performance based method]**.

In addition, Calvert and Banavar disclose that it would be advantageous use the relationship between performance and topology to make better core choices **[Calvert -- Page 640, Section 3.3, paragraph 1] [Banavar -- Col. 5 lines 61-62]**.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate determining performance parameters for the clients and using performance information in constructing the topology and selecting a subset of clients to be

primary clients, as taught by Calvert into the invention of Banavar, in order to achieve a fast performing multicasting system which routes the packets of information to all nodes in a short amount of time and with minimal delay for providing an optimal topology for routing information.

Regarding claim 10, Banavar teaches a method of forwarding information from a transmitting client to a receiving client in a multicast group comprising:

receiving an instruction from a multicast server to forward information to the receiving client **[Banavar -- Col. 2 lines 54-57 – Multicast server, i.e. publishing broker, sends instruction, i.e. event, to subscriber broker to forward information on to subscribing clients]** including a network location for the transmitting client and the receiving client, the network location relating to a data topology constructed by the server associated with each client of the multicast group **[Banavar -- Col. 5 lines 66-67 – Col. 6 lines 1-3 and lines 41-44 – In order to group brokers into clusters by network location, it is required that the location be determined, i.e. pinging the clients. Network location data, based upon the current configuration of the network, i.e. topology, is used to configure and group the brokers, i.e. primary clients, into clusters, i.e. subsets of the multicast group]**;

receiving the information **[Banavar -- Col. 2 line 56]**; and

forwarding the information to the receiving client **[Banavar -- Col. 2 lines 58-59]**.

Banavar fails to teach additionally using performance information to construct the topology of clients and to determine a primary client.

Calvert, however, teaches receiving performance information for determining a performance parameter **[Calvert -- Page 640, Sec. 3.4, Paragraph 2 – In order to know the performance of nodes, the system must receive performance information, i.e. bandwidth and delay, from each of the nodes]**.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the use of performance information in determining a primary client and construction of the topology, as taught by Calvert into the invention of Banavar, in order to achieve a fast performing multicasting system which routes the packets of information to all nodes in a short amount of time and with minimal delay for providing an optimal topology for routing information.

Regarding claim 11, Banavar-Calvert teach the invention substantially as claimed, as aforementioned in claim 10 above, including displaying the information to a user **[Banavar -- Col. 2 lines 58-59 – Clients subscribe to the information in order to watch/view the future information in which they have interest. Therefore, the reference implicitly teaches that the information is displayed to the client]**.

Regarding claim 12, Banavar-Calvert teach the invention substantially as claimed, as aforementioned in claim 10 above, including displaying the information to a user without positively indicating to the user that the information is being forwarded **[Banavar -- Col. 3 lines 13-15 and Col. 6 lines 41-44 and 61-63 – Because only brokers are needed for configuring, it is implicitly taught that the forwarding of events is transparent to the clients; therefore,**

they do not positively know what is going on in the background, i.e. forwarding of messages].

Regarding claim 18, Banavar teaches a client interface configured to transmit the information to a primary client from the server and to instruct the primary client to forward the information to a secondary client **[Banavar -- Col. 3 lines 16-27 – Publisher broker's interface, i.e. program, transmits information to subscriber brokers, i.e. primary clients, which forward information on to it's clients, i.e. secondary clients]**; and

logic configured to construct a data topology associated with the set of clients **[Banavar -- Figures 1, 4A-B, Col. 5 lines 30-52 and lines 61-67 and Col. 6 lines 41-60 – Topology is constructed between brokers and subscribers by constructing multicast clusters, i.e. subsets of multicast groups. This configuration, i.e. topology, is static unless network changes occur]** and for determining a primary client using network location of the client, the network location relating to a data topology **[Banavar -- Col. 5 lines 66-67 and Col. 6 lines 41-44 – Network location data, based upon the current configuration of the network, i.e. topology, is used to configure and group the brokers, i.e. primary clients, into clusters]**.

Banavar fails to teach additionally using performance information to construct the topology of clients and to determine a primary client.

Calvert, however, teaches selecting a primary client, i.e. a broker, based upon performance information gathered from all nodes which is a combination between bandwidth and delay **[Calvert -- Page 640, Section 3.4, paragraph 2 – Core node, i.e. primary client, is chosen using a performance based method]**.

In addition, Calvert and Banavar disclose that it would be advantageous use the relationship between performance and topology to make better core choices **[Calvert -- Page 640, Section 3.3, paragraph 1] [Banavar -- Col. 5 lines 61-62]**.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the use of performance information in determining a primary client and construction of the topology, as taught by Calvert into the invention of Banavar, in order to achieve a fast performing multicasting system which routes the packets of information to all nodes in a short amount of time and with minimal delay for providing an optimal topology for routing information.

Regarding claim 19, Banavar teaches a client configured to forward multicast information to another client comprising:

a server interface configured to receive the information from the server **[Banavar -- Col. 2 lines 54-56 – Subscribing broker receives message, i.e. event, from publishing broker, i.e. server]** and to exchange with the server control and network location data relating to a data topology constructed **[Banavar -- Col. 5 lines 30-52 and lines 61-67 and Col. 6 lines 41-44 – Network location data, based upon the current configuration of the network, i.e. topology, is used to configure and group the brokers, i.e. primary clients, into clusters, i.e. subsets of the multicast group. Control information directs the nodes to function as subscribers or brokers. Therefore, because this is used to configure system, information must be exchanged with publishing broker, i.e. server, to properly configure the system]**; and

a client interface configured to forward the information to another client **[Banavar -- Col. 2 lines 58-59]**.

Banavar fails to explicitly teach gathering and exchanging with the server, performance information.

Calvert, however, teaches sending performance information for determining performance parameters **[Calvert -- Page 640, Sec. 3.4, Paragraph 2 – In order to know the performance of nodes, the system must receive performance information, i.e. bandwidth and delay, from each of the nodes]**.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate exchanging performance information with the server and basing the topology construction on the performance information, as taught by Calvert into the invention of Banavar, in order to provide information to achieve a fast performing multicasting system which routes the packets of information to all nodes in a short amount of time and with minimal delay for providing an optimal topology for routing information.

Regarding claim 20, this is a system claim corresponding to the method claimed in claim 1. It has similar limitations; therefore, claim 20 is rejected based upon the same rationale.

Regarding claim 21, Banavar teaches a computer program product for multicasting information, the computer program product being embodied in a computer readable medium and comprising computer instructions **[Banavar -- Col. 3 lines 16-21]**. The remaining limitations of

claim 21 are similar to the limitations set forth in the method of claim 1. Therefore, claim 21 is rejected under the same rationale.

4. Claims 1-7, 10-12 and 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Banavar et al. (U.S. 6,336,119) in view of Chen et al. (U.S. 5,831,975).

Regarding claim 1, Banavar teaches a method of multicasting information to a set of clients comprising:

constructing a data topology associated with the set of clients **[Banavar -- Figures 1, 4A-B, Col. 5 lines 30-52 and lines 61-67 and Col. 6 lines 41-60 – Topology is constructed between brokers and subscribers by constructing multicast clusters, i.e. subsets of multicast groups. This configuration, i.e. topology, is static unless network changes occur]**;

transmitting the information to a primary client from a server **[Banavar -- Figures 1 and 4A and Col. 3 lines 7-12 – Brokers, i.e. primary clients, receive information from central source, i.e. publishing broker (Col. 2 lines 54-55)]**; and

instructing the primary client to forward the information to a secondary client **[Banavar -- Figures 1 and 4A and Col. 3 lines 13-15 – Brokers forward the information to their consumers]**.

Banavar fails to teach determining a primary client using performance information and a network location of the client in addition to using performance information to construct the topology. Chen, however, teaches selecting a core node, i.e. primary client, based upon bandwidth, i.e.

performance, information and network location or topology, i.e. border nodes, thereby using the performance and location to construct the topology **[Chen -- Col. 8 lines 15-28]**.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the use of performance information and network location in determining a primary client, i.e. core node, in addition to using performance information to construct the data topology, as taught by Chen into the invention of Banavar, in order to achieve an efficient and fast multicast tree **[Chen -- Col. 8 line 18]** which can guarantee quality-of-service (QoS) **[Chen -- Col. 6 lines 47-49]**.

Regarding claim 2, Banavar-Chen teach the invention substantially as claimed, as aforementioned in claim 1 above, including receiving performance information from the set of clients **[Chen -- Col. 8 lines 23-25 – In order to choose a core node with sufficient bandwidth, i.e. performance information, the system must receive performance information from each of the nodes]**.

Regarding claim 3, Banavar-Chen teach the invention substantially as claimed, as aforementioned in claim 1 above, including pinging clients to determine the network location of the clients **[Chen -- Col. 8 lines 16-22 – In order to determine which nodes are border nodes, it is required for the server to ping the clients and use that address to determine the client's location on the network, for example, to determine if a node is a border node. Therefore, this limitation is implicitly taught]**.

Regarding claim 4, Banavar-Chen teach the invention substantially as claimed, as aforementioned in claim 1 above, including wherein the information is streaming video **[Chen -- Col. 3 lines 25-32 – Video conferencing applications require underlying system to support multicasting]**.

Regarding claim 5, Banavar teaches a method of multicasting information to a set of clients comprising:

constructing a data topology associated with the set of clients **[Banavar -- Figures 1, 4A-B, Col. 5 lines 30-52 and lines 61-67 and Col. 6 lines 41-60 – Topology is constructed between brokers and subscribers by constructing multicast clusters, i.e. subsets of multicast groups. This configuration, i.e. topology, is static unless network changes occur]**;

transmitting the information to the primary clients for retransmission to other clients in the set of clients **[Banavar -- Figures 1 and 4A and Col. 3 lines 7-15 – Brokers, i.e. primary clients, receive information from central source, i.e. publishing broker (Col. 2 lines 54-55) and forward the information to their consumers, i.e. clients]**.

Banavar fails to explicitly teach determining a performance parameter for each of the clients to be used to construct the data topology and selecting a subset of the clients to be primary clients based upon performance information and network location.

Chen, however, teaches determining a performance parameter for each of the clients **[Chen -- Col. 8 lines 23-25 – In order to choose a core node with sufficient bandwidth, i.e. performance information, the system must receive performance information from each of the nodes]** and selecting a subset of the clients to be primary clients based upon the performance

information and network location **[Chen -- Col. 8 lines 15-28 – Core node is selected by choosing a node on the border, i.e. network location, and one which has sufficient bandwidth, i.e. performance information]**.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate determining performance parameters for the clients and using performance information to select a subset of nodes to be primary clients based upon performance information in addition to using the performance information to construct the data topology, as taught by Chen into the invention of Banavar, in order to achieve an efficient and fast multicast tree **[Chen -- Col. 8 line 18]** which can guarantee quality-of-service (QoS) **[Chen -- Col. 6 lines 47-49]**.

Regarding claim 6, Banavar teaches a method of multicasting information to a set of clients comprising:

constructing a data topology associated with the set of clients **[Banavar -- Figures 1, 4A-B, Col. 5 lines 30-52 and lines 61-67 and Col. 6 lines 41-60 – Topology is constructed between brokers and subscribers by constructing multicast clusters, i.e. subsets of multicast groups. This configuration, i.e. topology, is static unless network changes occur]**;

transmitting the information to the primary clients for retransmission to other clients in the set of clients **[Banavar -- Figures 1 and 4A and Col. 3 lines 7-15 – Brokers, i.e. primary clients, receive information from a central source, i.e. publishing broker (Col. 2 lines 54-55) and forward the information to their consumers, i.e. clients]**.

Banavar fails to explicitly teach determining a performance parameter for each of the clients to be used to construct the data topology and selecting a subset of the clients to be primary clients

based upon performance information and network location.

Chen, however, teaches determining a network location for each of the clients **[Chen -- Col. 8 lines 16-22 – In order to determine which nodes are border nodes, it is required for the server to determine the locations of each of the nodes]**, determining a primary client, i.e. core node, based upon performance criteria and network location **[Chen -- Col. 8 lines 15-28]** and selecting a subset of the clients to be primary clients based upon the performance and network location information **[Chen -- Col. 8 lines 15-28 – Core node is selected by choosing a node on the border, i.e. network location, and one which has sufficient bandwidth, i.e. performance information]**.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate determining performance parameters for the clients and using performance information to select a subset of nodes to be primary clients based upon performance information in addition to using the performance information to construct the data topology, as taught by Chen into the invention of Banavar, in order to achieve an efficient and fast multicast tree **[Chen -- Col. 8 line 18]** which can guarantee quality-of-service (QoS) **[Chen -- Col. 6 lines 47-49]**.

Regarding claim 7, this is a method claim similar to the method claimed in claims 5 and 6. It has similar limitations; therefore, claim 7 is rejected under the same rationale.

Regarding claim 10, Banavar teaches a method of forwarding information from a transmitting client to a receiving client in a multicast group comprising:

receiving an instruction from a multicast server to forward information to the receiving client **[Banavar -- Col. 2 lines 54-57 – Multicast server, i.e. publishing broker, sends instruction, i.e. event, to subscriber broker to forward information on to subscribing clients]**;

constructing a data topology associated with the set of clients **[Banavar -- Figures 1, 4A-B, Col. 5 lines 30-52 and lines 61-67 and Col. 6 lines 41-60 – Topology is constructed between brokers and subscribers by constructing multicast clusters, i.e. subsets of multicast groups. This configuration, i.e. topology, is static unless network changes occur]**;

receiving the information **[Banavar -- Col. 2 line 56]**; and

forwarding the information to the receiving client **[Banavar -- Col. 2 lines 58-59]**.

Banavar fails to teach determining a primary client using performance information and a network location of the client in addition to using performance information to construct the topology. Chen, however, teaches receiving performance information for determining a performance parameter and network information relating to the topology of the network **[Chen -- Col. 8 lines 15-28 – In order to ascertain the bandwidth to determine if sufficient capabilities exist and border node information, it is required that performance and network topology information be received which detail this information about the nodes]**.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the use of performance information and network location in determining a primary client, i.e. core node, in addition to using performance information to construct the data topology, as taught by Chen into the invention of Banavar, in order to achieve an efficient and

fast multicast tree **[Chen -- Col. 8 line 18]** which can guarantee quality-of-service (QoS) **[Chen -- Col. 6 lines 47-49]**.

Regarding claim 11, Banavar-Chen teach the invention substantially as claimed, as aforementioned in claim 10 above, including displaying the information to a user **[Banavar -- Col. 2 lines 58-59 – Clients subscribe to the information in order to watch/view the future information in which they have interest. Therefore, the reference implicitly teaches that the information is displayed to the client]**.

Regarding claim 12, Banavar-Chen teach the invention substantially as claimed, as aforementioned in claim 10 above, including displaying the information to a user without positively indicating to the user that the information is being forwarded **[Banavar -- Col. 3 lines 13-15 and Col. 6 lines 41-44 and 61-63 – Because only brokers are needed for configuring, it is implicitly taught that the forwarding of events is transparent to the clients; therefore, they do not positively know what is going on in the background, i.e. forwarding of messages]**.

Regarding claim 18, Banavar teaches a client interface configured to transmit the information to a primary client from the server and to instruct the primary client to forward the information to a secondary client **[Banavar -- Col. 3 lines 16-27 – Publisher broker's interface, i.e. program, transmits information to subscriber brokers, i.e. primary clients, which forward information on to it's clients, i.e. secondary clients]**; and

logic configured to construct a data topology associated with the set of clients **[Banavar -- Figures 1, 4A-B, Col. 5 lines 30-52 and lines 61-67 and Col. 6 lines 41-60 – Topology is constructed between brokers and subscribers by constructing multicast clusters, i.e. subsets of multicast groups. This configuration, i.e. topology, is static unless network changes occur]**

Banavar fails to explicitly teach determining a primary client using performance information and a network location of the client relating to the topology and constructing the topology based upon the performance information.

Chen, however, teaches selecting a primary client, i.e. core node, and topology based upon performance criteria and network location information **[Chen -- Col. 8 lines 15-28 – Core node is selected by choosing a node on the border, i.e. network location, and one which has sufficient bandwidth, i.e. performance information]**.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the use of performance information and network location in determining a primary client, i.e. core node, in addition to using performance information to construct the data topology, as taught by Chen into the invention of Banavar, in order to achieve an efficient and fast multicast tree **[Chen -- Col. 8 line 18]** which can guarantee quality-of-service (QoS) **[Chen -- Col. 6 lines 47-49]**.

Regarding claim 19, Banavar teaches a client configured to forward multicast information to another client comprising:

a server interface configured to receive the information, i.e. control information, from the server **[Banavar -- Col. 2 lines 54-56 – Subscribing broker receives message, i.e. event, from publishing broker, i.e. server. Control information directs the nodes to function as subscribers or brokers]**;

constructing a data topology associated with the set of clients **[Banavar -- Figures 1, 4A-B, Col. 5 lines 30-52 and lines 61-67 and Col. 6 lines 41-60 – Topology is constructed between brokers and subscribers by constructing multicast clusters, i.e. subsets of multicast groups. This configuration, i.e. topology, is static unless network changes occur]**;

a client interface configured to forward the information to the client **[Banavar -- Col. 2 lines 58-59]**.

Banavar fails to explicitly teach exchanging with the server, performance and network location information and using the performance information to construct the topology.

Chen, however, teaches sending performance information for determining performance parameters **[Chen Col. 8 lines 15-28 – In order to know the performance and location of nodes, the system must receive performance information, i.e. bandwidth and network location information, i.e. topology for determining border nodes, from each of the nodes]**.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the use of performance information and network location in determining a primary client, i.e. core node, in addition to using performance information to construct the data topology, as taught by Chen into the invention of Banavar, in order to achieve an efficient and fast multicast tree **[Chen -- Col. 8 line 18]** which can guarantee quality-of-service (QoS) **[Chen -- Col. 6 lines 47-49]**.

Regarding claim 20, this is a system claim corresponding to the method claimed in claim 1. It has similar limitations; therefore, claim 20 is rejected based upon the same rationale.

Regarding claim 21, Banavar teaches a computer program product for multicasting information, the computer program product being embodied in a computer readable medium and comprising computer instructions **[Banavar -- Col. 3 lines 16-21]**. The remaining limitations of claim 21 are similar to the limitations set forth in the method of claim 1. Therefore, claim 21 is rejected under the same rationale.

Response to Arguments

5. Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Benmohamed et al. (U.S. 6,795,399) discloses a method for designing a network topology with performance guarantees.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas J. Mauro Jr. whose telephone number is 571-272-3917. The examiner can normally be reached on M-F 8:00a.m. - 4:30p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David A. Wiley can be reached on 571-272-3923. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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TJM
TJM
December 23, 2004

William C. Vaughn
Primary Examiner
Art Unit 2143